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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,645	07/17/2003	Blake Johnson	PA2362US	1029

22830 7590 12/28/2004

CARR & FERRELL LLP
2200 GENG ROAD
PALO ALTO, CA 94303

EXAMINER

HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/621,645

Applicant(s)

JOHNSON ET AL.

Examiner

Joseph P. Hirl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-26 are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1-26 are all developed related to the “locally mean-reverting-diverting (LMRD) model. This model has its analytic roots in the mean-reverting model identified in para 0033 of the specification in two forms, both of which contain the term dZ which is identified in para 0034 as the “standard normal Brownian motion process. Continuing to para 0038, such models are extended by relaxing a constraint. Specifically, “in the locally mean-reverting-diverting family, an equivalent coefficient may take on negative values over defined periods of time, as well as fluctuate between positive and negative values.”

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Returning to the concept of Brownian motion, such process can be described as a process $\{Z(t); t \geq 0\}$ that starts at the origin and evolves randomly and continuously over time. The process $\{Z(t); t \geq 0\}$ has the property that for a fixed t , $Z(t)$ is a normally distributed random variable with mean 0 and variance t . Further, $\{Z(t); t \geq 0\}$ is actually a process that satisfies two properties. First, the change $\Delta Z = Z(t+\Delta t) - Z(t)$ in $Z(t)$ from time t to time $t + \Delta t$ is related to Δt by $\Delta Z = Y(\Delta t)^{0.5}$ where $Y \sim N(0,1)$ and second, the values of ΔZ for any two different short time intervals of length Δt are independent.

Further to the specification that includes examples starting at para 0063, the following equation is cited for the "discrete-time form of the locally mean-reverting-diverging family of models with time-varying parameters:

$$x_{t+1} - x_t = k_{t+1}(\bar{x}_{t+1} - x_t) + \sigma_{t+1}\tilde{\varepsilon}_{t+1}$$

The specification does not enable the process from the definition of the LMRD model through to its implementation that allows one of ordinary skill in the art to replicate the invention without undue experimentation.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-20, 23-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to

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a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. The subject claims, albeit in a trivial example, can be implemented using pencil and paper ... which is not in the technological arts.

Conclusion

6. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

- Bradley University, Black-Scholes – Option Pricing Models
- Cox, U.S. Patent 5,768,284
- Horrigan et al, U.S. Patent 6,493,682
- Ehlers et al, U.S. Patent 6,216,956

7. Claims 1-26 are rejected.

Correspondence Information

Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anthony Knight can be reached at (571) 272-3687.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

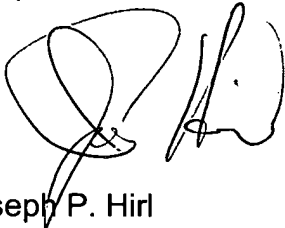
Washington, D. C. 20231;

or faxed to:

(703) 872-9306 (for formal communications intended for entry);

or faxed to:

(571) 273-3685 (for informal or draft communications with notation of "Proposed" or "Draft" for the desk of the Examiner).

A handwritten signature in black ink, appearing to read 'J. P. Hirl', with a large, stylized initial 'J' and 'P'.

Joseph P. Hirl

December 20, 2004